JOINT COST IN THE PACKING INDUSTRY

The *Report*[1] of the Federal Trade Commission on the "Profits of the Packers" should receive the most careful attention of economists and accountants who are interested in the problem of joint cost. In unmistakable language the commission condemns as unsound the methods of cost calculation employed in the packing industry, albeit the methods are fundamentally those which are followed by the United States Department of Agriculture and the various public-service commissions in dealing with similar cost problems. The economist will note that the commission offers no constructive or practical suggestions as to how the problem of cost-finding in the by-product industries should be solved; and the keen accountant who is not led astray by the sentiment that the word of a government body is the last word will realize that the "generally recognized principles of accounting," which the packers are openly accused of ignoring, are principles which have been evolved to meet the needs of business enterprises essentially different in character from the business of meat-packing concerns.

Before reviewing in detail the criticisms offered by the Federal Trade Commission, it may be well to note those peculiarities of the packing industry which have given rise to the present system of cost accounting. In the first place, the meat-packer does not assemble raw materials into a finished unit as is the case in most manufacturing industries. He is engaged in dividing his raw material, consisting of a single commodity, into a great many finished products, differing widely from one another both in character and utility. Obviously, there is no way of ascertaining the money cost of each of the various products.

Another peculiarity about the packing industry which affects the accounting system is its complexity. From the point of view of functions performed, the industry is a collection of four fairly distinct industries, each performing a different function. These

[1] *Report of the Federal Trade Commission on the Meat Packing Industry*, Part V, 1920.

functions may be enumerated as follows: (1) slaughtering and meat-packing; (2) storing; (3) specialized manufacture of by-products; and (4) distribution or jobbing.

There are many small concerns that perform only one of these functions. Some packers, for instance, are concerned only with the slaughtering function. They sell their raw by-products to other establishments, engage little, if at all, in the storing of products, and are dependent on a local market for the sale of their meats. Other concerns may confine themselves to storing the products of the packing-houses. There are others which do not engage in the slaughtering of animals, but manufacture the raw by-products derived from slaughtering into finished products. Finally, there are concerns which devote their attention entirely to the distribution of packing-house products. They neither slaughter, store, nor engage in the processing of by-products. Here and there are establishments which perform two, three, or all four of these functions.

The economic reason for the distribution function should not be overlooked. According to the estimates[1] of the Federal Trade Commission, 70 per cent of all cattle other than dairy cows, 70 per cent of all sheep, and 51 per cent of the hogs are raised west of the Mississippi River, while 69 per cent of the population of the country lives to the east of it. Either live animals or fresh meat must be shipped from West to East, and it has been found to be more economical to ship fresh meat in refrigerator cars from the producing to the consuming sections than to ship live animals.

The performance of any one of these four functions requires special plant and machinery, special personnel, and special accounting. Each of these functions belongs to an industry in itself, and therefore the concern that performs two or more functions expects to make a profit on each of them—though it may make a loss—entirely separate and distinct from the profit that may be made in any of the other processes and functions performed by packing-houses.

The packing industry is further complicated by the fact that even in the performance of one function, involving the manu-

[1] *Report of the Federal Trade Commission on Private Car Lines*, 1919, p. 34.

facture of by-products, a single concern may represent a great collection of industries. In addition to the slaughtering of animals and the cutting and sale of meat, a packer may be engaged in the business of making sausage, canning meat, etc.; he may operate a soap factory in order to utilize inedible greases, or an oleomargarine factory for the utilization of edible fats; he may also engage in the manufacture of glue, commercial fertilizer, and a whole variety of products in which a large portion of the raw material comes from slaughtered animals.

In order to utilize fully their physical equipment and sales organization, some packers have seen fit to engage in the production or merchandising of such products as poultry, eggs, cheese, butter, lard substitutes, and canned goods. All these varied operations may require the operation of storage plants, power plants, box factories, mechanical supply departments, etc.

Thus, the meat-packing business is essentially different from the great majority of manufacturing enterprises. The peculiarities are such that the cost-accounting methods and procedure built up to serve other businesses are not applicable. Under the circumstances there is only one method that the packer can follow if he is to know in what operations it is worth his while to engage. In the first place, he must deduct the value of all by-products from the total live and killing cost of the animals slaughtered in order to arrive at a cost figure for his main product. If any of his by-products are advanced to a further stage of processing, the net market value of the by-products must be taken as the initial cost in the undertaking. Such procedure would necessarily follow from the fact that the packer has one of two alternatives where his raw by-products are concerned: either he can sell them to someone in the outside trade at the current market prices, or he himself can assume the cost and risk of subjecting them to further processing.

For accounting purposes, the large packing plant is divided into a number of departments, each dealing with a specific product or a group of related products. The operating departments are to be distinguished from the service departments because the latter sell few products to the outside world. As a rule, they merely furnish the operating departments with supplies and services.

Each department records its own purchases, sales, inventories, expenses, and transfers to and from other departments, so that the net result of each operating department in terms of profit or loss may be readily ascertained for a given period. Not all of the service departments will show a net balance because in some cases their services are rendered to the operating departments at cost.

The reason for the maintenance of these departments is to be found in the varied manufacturing processes and functions which characterize the packing industry. As has already been indicated, the industry is really a collection of industries, a whole succession of industries, each one of which is expected to stand on its own feet.

Suppose, for instance, that animal-fat products (a by-product of beef) are transferred to the soap department. To the beef department the transfer is obviously a sale; to the soap department it is a purchase of raw material. Each department pays for all it gets and is paid for all that it gives. Since the soap department represents a distinct business in competition with firms engaged only in soap-making, the soap department of a packing plant is operated along similar lines. All material transferred to this department is valued at the current market price, the price at which competing soap concerns obtain their raw material.

The departmentization of accounts also provides the packer with statistics on operating costs which enable him to know in what form a given product should be marketed, whether it should be sold in its present state or whether it should be processed further. Bacon, for instance, may be sold either in the cured or smoked state. Hams may be sold as fresh, cured, boiled, or smoked product. The packer who conducts both an oleomargarine and lard compound business has the choice of transferring oleo oil to the oleomargarine factory or of selling it in the open market. The final decision in all such cases will depend entirely upon the cost of processing and the market that exists for the product in each of its various stages. If the packer is to be able to adjust his business quickly and intelligently to the varying demands of the market, he must have at hand complete statistics on the operating costs of each department.

Under the departmental system of accounts, the method of arriving at the dressed cost of beef is as follows: To the cost of the live animal is added the current expense of handling the animal through the packing-house and branch-house organization. This gives total cost. From this total is deducted the value of the hides, according to weight and grade, figured at the actual market value of cured hides, with an allowance for shrinkage in curing and for expense of curing. There is also deducted the value of the fat and other by-products, figured at their full market value at the time the animals are killed, less the cost of processing. Deducting these figures from the total cost (live cost plus the expense of handling) gives the cost of the dressed beef, which, divided by the weight of the beef, gives the cost per pound. This cost, compared with the selling price of the beef from a particular lot, informs the packer whether he is making or losing money day by day and week by week. It is the guiding factor in his buying operations.[1]

The Federal Trade Commission does not take kindly to this method of cost calculation. The commission's conception of sound principles of cost accounting in the meat-packing industry is vaguely indicated in the following language:

> To get at the profit on beef it is necessary to secure the cost of that portion (about 55 per cent of the live animal weight) of the steer which goes into carcass meat. Not until a cost system is evolved whereby there is an initial slaughtering department which kills the animal and transfers the various parts to other departments (such as dressed beef, hides, oleo, etc.) in such a fashion that each department absorbs a proper share of the total live and killing cost, each bearing its proportion of waste and shrinkage, will the packers be enabled to announce with any authority their costs and profits per pound of beef produced.[2]

The commission contends that beef is only one part of the total animal, and that "the cost of beef cannot, accordingly, be assumed

[1] It is true that unit costs are also a factor in the packer's selling operations, but they are not a guiding factor. Beef is a perishable product and must be sold in the market for what it will bring. A change in the weather or industrial conditions may so reduce the demand for beef, and therefore the price, as to compel the packer to sell below cost, in which case he will bid less for cattle. On the other hand, if he can sell at a profitable margin over cost, he will increase his purchases and develop more volume.

[2] *Report of the Federal Trade Commission on the Meat Packing Industry*, Part V, 1920, p. 77.

to be the cost of the live animal, credited with the returns from all material except carcass meat";[1] that hides, casings, oleo, and other by-products should bear their "proper share of the total live and killing cost"; and that inasmuch as the packers do not include in their published figures of profits per head of beef the profits on soap, glue, leather, fertilizer, and other specialty products manufactured in part from cattle, "their [profit] figures as presented are understated and erroneous."[2]

It can hardly be said that these are the "generally recognized principles of accounting" when it comes to dealing with the problem of joint cost. In the first place, such principles cannot be applied. The commission itself notes that the inclusion of profits from the glue and soap departments, etc., in profits per head of beef "would entail a very delicate, if not altogether impossible, allocation of a part only of the profits in specialty departments."[3] And even if such profits were arbitrarily allocated, it would still be possible for the Federal Trade Commission to contend that the packers were inaccurate in their statement of profits.

Over and above these considerations, however, is the fact that the profit or loss in specialty departments in no way belongs to the beef department. These are distinct industries. Each specialty department is in competition with outside concerns which are in no way connected with slaughtering establishments. Furthermore, the products that are transferred to specialty departments are transferred at market price, or, if there is no active market for the product (as is true in a few cases) in its present state, at the market price for the finished product less the cost of processing. In other words, no allowance is made for a profit on the product at the time the transfer is made. Therefore, no portion of any profit (or loss) that is realized in a specialty department may rightly be claimed by the beef department.

In contending that the profits of the packers are inaccurately stated because their "inventories are invariably priced on a market basis, when accounting principles require a cost basis,"[4] the com-

[1] *Report of the Federal Trade Commission on the Meat Packing Industry*, Part V, 1922, p. 77.

[2] *Ibid.*, p. 75. [3] *Ibid.* [4] *Ibid.*, p. 11.

mission again takes the position that the cost-accounting principles which have been developed to meet the needs of those industries that assemble raw materials into a definite unit are also applicable in their entirety to the joint-cost industries. Obviously this position is untenable. There is no known method of calculating the money cost of hides, fats, and other by-products of beef. Partly for that reason it is necessary to use market prices in taking inventories and in transferring products from one department to another. The main reason for this procedure, however, is that a large packer is engaged in a business consisting of a number of distinct businesses in each of which there are successive processes, and he has, or could find, an opportunity of selling his product at practically every stage of manufacture. (Indeed, he frequently transfers only a portion of a particular product to another department, selling the remainder to the outside trade.) If, under these conditions, he chooses to transfer the product to another department for further processing, then the net market value of the product must be taken as the initial cost in the undertaking. In other words, since transfers and inventories cannot always be based on actual money cost, it is only logical that they be based upon "opportunity cost." The same peculiar conditions are not found in the ordinary manufacturing enterprises where the product is salable only in its completed state.

The accounting agents of the commission in going over the packers' accounts made one suggestion with reference to the method of figuring the cost of dressed beef, whereby the total marketable weight obtained from a steer, say 700 pounds (including weight of beef, cured hides, rendered tallow, and other finished by-products), should be divided into the live cost, say $140. This would show a cost of 20 cents a pound for each item received from the steer. It was contended that the proper method would be to charge out each part of the steer at 20 cents a pound, and that the beef should be marketed on the basis of this same average cost.

The adoption of such a suggestion would mean that tankage, bones, and other low-priced material worth 3 to 5 cents a pound would have to be considered by the packer as costing 20 cents a pound. On sales of such material the books would show a loss of

15 to 17 cents a pound. On the other hand, hides selling for 40 cents would be shown on the books as costing 20 cents a pound, and the 100 per cent profit would doubtless be regarded as "profiteering." It would, of course, be impossible for any business to operate intelligently on the basis of such an accounting procedure.

It is difficult to reconcile the hostile attitude of the commission toward the packers' cost-accounting system with the fact that Part VI of the commission's *Report*[1] contains the results of a number of investigations, conducted by the Department of Agriculture for the purpose of ascertaining the cost of growing beef animals, in which the accounting procedure is no less faulty from the point of view of the commission than the procedure followed in the packing industry. For that matter, it is no secret that the Department of Agriculture uses substantially the same methods in its farm cost investigations that the packer uses.

The similarity between the two cost-accounting systems is due to the fact that almost every farm product, like every packing-house product, is subject to conditions of joint cost. Wheat and wheat straw, for instance, are inseparable products. So also are corn and silage (or fodder), milk and calves, beef animals and manure, etc. The problem of ascertaining the cost of producing beef animals which have been fattened on the products of the farm is exactly comparable to the cost-accounting problems that are constantly being met in the packing industry. It is the problem of ascertaining the final cost of a product, subject to conditions of joint cost, when the money cost of some of the raw materials is unknown.

It is necessary to note only a few of the methods used by the Department of Agriculture in dealing with this particular problem. In some of the investigations into the cost of producing beef animals, "feeds were charged to cattle at the monthly local market prices for the month during which the feed was eaten."[2] In other cases feed

[1] *Report of the Federal Trade Commission on the Meat Packing Industry*, Part VI, 1919. It is only fair to state that the commission disclaimed all credit and responsibility for this part of the *Report* because it represented the work of the Department of Agriculture. See "Letter of Transmittal," p. 1.

[2] *Ibid.*, p. 108.

costs were "based on the average farm price of the various feeds used as estimated by the farmers."[1] The general rule seems to have been to base the value of the feed on the cost laid down, or, if raised on the farm, to charge it to cattle costs at its net farm value when consumed.

On those farms where pork was a by-product of beef animals, pork was "credited to the cattle at what it sold for."[2] The credit allowed for manure varied in particular cases, but in general was "based on the average number of loads of manure reported by the farmers to have been produced and on what the farmers consider this manure to be worth per load to them."[3] In ascertaining the cost of producing calves, a credit was allowed for milk, consisting of the net value of "milk, cream, and butter sold or used on the table, and also whole and skim milk fed to the calves and hogs."[4] "On a number of farms cream was sold at 75 cents to 80 cents per gallon, in which cases these figures were used. These values were based on the average prices which prevailed during the three years."[5]

Thus, so far as fundamentals are concerned, there is substantial agreement in the methods employed by the Department of Agriculture and by the packers in dealing with the problem of unit cost.[6] In both cases the net market value of by-products is allowed as a credit against total costs; also, the transfer of products (whose

[1] *Ibid.*, p. 20.

[2] *Ibid.*, p. 112.

[3] *Ibid.*, p. 22.

[4] *Ibid.*

[5] *Ibid.*

[6] It is the opinion of the writer that the Department of Agriculture and the various farm bureaus carry the use of "opportunity cost" too far when they include land taxes and interest on land values as elements in farm cost. There would be no objection to this procedure if it were possible to include under gross farm income the yearly appreciation in land values. But such calculations would be hazardous and of doubtful value; and so far as the writer is aware, no attempt has been made to include such income.

The simplest way of taking into account the appreciation of land values in calculating farm costs is to view the problem precisely as it is viewed by the prospective land buyers. If they let the land to a tenant they can get a cash rent of only 3 or $3\frac{1}{2}$ per cent normally, and out of this they are obliged to pay the land taxes.

The Department of Agriculture, therefore, should not include land taxes plus the current rate of interest on land values as the cost of land service. Land charges should be limited solely to the cash rental that the farm-owner could obtain from a tenant. Since the landowner would pay the land taxes out of his rent, no account should be taken of land taxes in figuring farm costs.

costs are not ascertainable) from one department to another is based on market price. In reality, the farm, no less than the packing house, has its departments, and the Department of Agriculture recognizes this fact when it charges to cattle costs the net market value of feed produced and consumed on the farm. Obviously the procedure that is followed in transferring products must also be used in taking inventories.

In view of the many precedents which the Department of Agriculture has established in the field of joint-cost accounting, and the inability of the Federal Trade Commission to suggest any logical improvement in the packers' cost-accounting system—on the basis of which the packers conduct purchases and sales of hundreds of millions of dollars worth of live stock and meats every year—it is hardly appropriate for the commission to state that "the inaccuracy of the present methods of figuring unit costs and profits casts doubt on all the public statements and advertisements of the great packers dealing with profits per pound of beef and of meat products generally";[1] or, that on account of the practice of valuing their products on the basis of market price—the only basis possible under the circumstances—rather than cost, the packers "have available a technique whereby reported earnings may be inflated or deflated practically at will without serious possibility of detection."[2] Such statements might lead one—in fact, *have* led many—to believe that the packers have deliberately "dressed" their accounts, although the commission found no evidence of falsification.

Economists may well ask the question, Is it the function of the Federal Trade Commission to condemn accepted methods of dealing with so delicate a problem as joint cost, thereby creating the impression that inasmuch as there is no known method of calculating the money cost of joint products, the packers are inaccurate in their statements of unit cost, when in point of fact they are following the only practical course that is open? If such is the function of the commission, should it not have *completed* its study of the cost

[1] *Report of the Federal Trade Commission on the Meat Packing Industry*, Part V, p. 12.

[2] *Ibid.*, p. 58.

accounting methods of the packers—undertaken at the instance of the United States Food Administration with a view to developing a uniform accounting system—so that it would have been able to propose some definite and practical cost-finding method (if it still found the packers' method unsatisfactory) applicable not only to the business of meat-packing but also to the business of farming and all other by-product industries?

As matters now stand, all industries which process their by-products are in a most peculiar position. On the one hand their cost-accounting methods are subject to condemnation by the Federal Trade Commission, while in the opinion of another department of the government they are based on "generally recognized principles." It is the function of the Federal Trade Commission, having stated the problem, to solve it; but in the writer's opinion there is no likelihood that the solution will be forthcoming.

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